



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/792,323	03/03/2004	Lawrence C. Lei	AMAT/5191C1/ISM/CORE/MCVD	4370

44257 7590 10/13/2006

PATTERSON & SHERIDAN, LLP  
3040 POST OAK BOULEVARD, SUITE 1500  
HOUSTON, TX 77056

EXAMINER

PAIK, SANG YEOP

ART UNIT	PAPER NUMBER
----------	--------------

3742

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

11

<b>Office Action Summary</b>	Application No. 10/792,323	Applicant(s) LEI, LAWRENCE C.	
	Examiner Sang Y. Paik	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 August 2006.  
 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10, 12-17, 19 and 21 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-10, 12-17, 19 and 21 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 6-9, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Suntola et al (US 4,389,973).

Suntola shows a vaporizer having a housing with an interior volume and an inlet for a carrier gas, the interior volume to receive solid chemical precursor, at least two spaced surfaces (53, 54) with heating elements to allow flow of the carrier gas therebetween, and an outlet connected to a reaction chamber (10) for chemical vapor deposition including atomic layer deposition. Also see Figure 8.

With respect to the recitation of solid precursors being tantalum or tungsten, it is noted that these recitations relate to the materials or articles worked upon by the apparatus, and they do not limit the apparatus claims. MPEP 2115.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 3742

4. Claims 3-5, 10, 12, 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suntola et al (US 4,389,973) in view of Onoe et al (US 6,270,839).

Suntola shows the apparatus claimed except the at least two surfaces are selected from the claimed materials.

Onoe shows the apparatus for vaporizing a solid precursor claimed including a housing with at least two surfaces in a linear shape with baffles (60), and it further shows that surfaces can be made of a mesh or stainless steel. It also shows it is known to use a mesh type made of steel wires.

In view of Onoe, it would have been obvious to one of ordinary skill in the art to adapt Suntola with the surfaces made of the claimed materials to allow a more effective vaporization of the solid precursors while adequately containing such precursors within the surfaces.

5. Claims 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suntola et al (US 4,389,973) in view of Horsky (US 6,452,338).

Suntola shows the apparatus claimed except having a heating member in the wall of the housing.

Horsky shows a vaporizer having heating element provided in the wall of the housing which contains the solid precursor. In view of Horsky, it would have been obvious to one of ordinary skill in the art to adapt Suntola with the heating element in the wall of the housing as an alternative heating element arrangement to also efficiently heat the vaporizing precursor.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suntola in view of Horsky as applied to claims 16 and 19 above, and further in view of Onoe et al (US 6,270,839).

Art Unit: 3742

Suntola in view of Horsky except the at least two surfaces are selected from the claimed materials.

Onoe shows the apparatus for vaporizing a solid precursor claimed including a housing with at least two surfaces in a linear shape with baffles (60), and it further shows that surfaces can be made of a mesh or stainless steel. It also shows it is known to use a mesh type made of steel wires.

In view of Onoe, it would have been obvious to one of ordinary skill in the art to adapt Suntola, as modified by Horsky, with the surfaces made of the claimed materials to allow a more effective vaporization of the solid precursors while adequately containing such precursors within the surfaces.

#### *Response to Arguments*

7. Applicant's arguments filed 8/1/06 have been fully considered but they are not persuasive.

The applicant argues the applied prior art Suntola does not show the recited element including the solid chemical precursor applied to the at least two surface. Suntola clearly shows the solid material M as the vapor source in the least two surfaces (53, 54). Also see column 4, lines 65-68.

The applicant argues there is no motivation to combine Suntola with Onoe for vaporizing a solid precursor in combination with the recited elements. It is noted that Onoe is applied to further show the recited surface materials and that the vaporization of the solid precursor was shown by Suntola. Since Onoe also relates to an apparatus for vaporizing solid precursor, the applied prior art is the analogous art in the same field of endeavor which would allow one of

Art Unit: 3742

ordinary skill in the art to look Onoe and modify the recited surfaces as an alternatively suitable surface material for vaporizing solid precursors.

With respect to Horsky, the applicant argues there is no motivation to combine. It is noted that Horsky is applied for teaching the heating member in the wall of the housing. Since Horsky also relates to vaporizing a solid chemical precursor and is in the same field of endeavor as in Suntola and since it relates how the solid chemical precursor can also be heated, the motivation is an alternative heating element arrangement under which the solid precursor can be heated.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y. Paik whose telephone number is 571-272-4783. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

Art Unit: 3742

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S.R.

Sang Y Paik  
Primary Examiner  
Art Unit 3742

syp